WHAT IS CLAIMED IS:

1. A method for decoding transmitted data that has been generated by encoding a sequence of information data with a convolutional encoder

5 that generates convolutional codes based on an input sequence of information data, the encoder characterized by a constraint length K and a rate k/n, the method employing a decoder with a memory, the method comprising the steps of:

   (a)   storing a first encoder state corresponding to a first time step;

10 (b)   beginning at the first time step, performing a first traceback through a plurality time steps, thereby determining a first input bit corresponding to an encoder state transition from the last time step of the first traceback to the second to last time step of the first traceback;

   (c)   storing in the decoder memory a first possible input bit corresponding to

15 a transition from an encoder state at a third time step within the first traceback, to an encoder state at a fourth time step within the first traceback, where neither the third nor fourth time steps are the last time step;

(d) performing a second traceback beginning at a second time step and encompassing the first time step, thereby determining a second encoder state at the first time step;

(e) comparing the first encoder state with the second encoder state;

5   (f) if the first encoder state is equal to the second encoder state, designating the first possible input data bit as a decoded data bit corresponding to a transition from the encoder state at the third time step to the encoder state at the fourth time step.

2. The method of claim 1 wherein the second time step is the next time step

10   after the first time step.

3. The method of claim 1 wherein the third time step is the next time step after the last time step.

4. The method of claim 1 wherein the second traceback ends at the first time step.

15   5. The method of claim 1 wherein the second traceback traces back through one time step.

6. The method of claim 1 further comprising the steps of storing in the decoder memory, for each transition within the first traceback, a possible

input bit corresponding to the transition, thereby storing a plurality of

possible input data bits in addition to the first possible input bit.

Add Al7